

## Blending In: Lexum's Approach to Cloud-Based Services

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**Abstract.** This paper contemplates how legal information providers can truly benefit from cloud computing. It shows how the main technological needs of decision-making bodies, governing bodies, publishers, and LIIs can be met by Lexum's distinctive SaaS approach. It concludes that online solutions capable of blending into the legal information provider's environment provide the most direct path for them to leverage the potential of the cloud.

**Keywords:** Cloud, SaaS, online solution, off-the-shelf, self-publishing, content management, search engine, legal information.

A few months ago Bell Canada, the leading telecommunication provider in Canada, ran a national marketing campaign promoting its cloud solutions. Like anybody traveling for business, I noticed their ads at the airport. The ads were huge; they were all around. You could not miss the message: put your data online with us, we are fast, we are secure. The investment required for such a marketing campaign targeting the general public demonstrates the fundamental impact of cloud computing on the current economy. Cloud computing is now recognized by most analysts as the leading trend in the IT industry. According to Gartner, total spending on cloud services was \$110 billion in 2012 and should grow to \$237 billion by 2017 (Gartner, 2013). No wonder the market leaders are all fighting for their piece of the pie.

For individuals, the battle is made evident by service providers' recurring offers to store personal data online. Google Drive, Apple iCloud and Drop Box are only a few well-known brands among a plethora of similar players. Most of them are ready to give away free gigabytes of storage space for your pictures, music and films in order to secure your traffic as a user. With the exponential growth of electronic data accumulated by everyone, this traffic is bound to be converted into revenues eventually.

This said, businesses and institutions accumulate data at an even greater speed and, more importantly, have financial incentives to improve the efficiency of their IT infrastructure. For these reasons the range of enterprise cloud computing services has expanded rapidly over the last few years. Infrastructure as a Service (IaaS) is what most people associate with cloud computing. It involves on-demand provision of computing power in the form of physical or, most often, virtual servers. Platform as a Service (PaaS) goes further by also offering software environments for developing and deploying online solutions. Finally, Software as a Service (SaaS)

providers offer online applications designed to meet the requirements of specific end users. These different approaches complement one another, and it is not unusual for a SaaS software publisher to develop its product on top of a PaaS solution hosted by a separate IaaS provider.

The main reasoning behind all of this outsourcing is that organizations aiming for efficiency should focus on their core business, without getting entangled in IT issues (Hamdaqa, 2012). Anyone with experience in established organizations can confirm the wisdom of this. For me, Lexum's timesheet management is the best example. For years, Lexum had been using an internally developed timesheet management solution that never quite matched the expectations of those using it but that nevertheless required maintenance and upgrades. It was eventually replaced by one of the leading SaaS solutions in this field (Replicon), allowing Lexum to both improve its HR management and save money.

But how can online legal information providers truly benefit from the cloud? Of course, like any other organization, they can manage timesheets, payroll, and customer relations online much more efficiently than only a few years ago. The next logical step is to store customized, handcrafted, legal information systems on Amazon's Web Services, IBM Smart Cloud or any other equivalent, and embrace IaaS. Doing so should entail some of the usual benefits associated with the cloud: monetary savings, capacity increases and improved availability. But, aside from the data storage location, this approach changes very little for those in charge of managing or disseminating legal information. They are still left with the need to either develop their own personalized solution, or hire consultants to do so on their behalf.

Instead, Lexum approaches the cloud with the premise that most legal information providers share common needs and objectives. They have archives of judicial information, regulatory material and doctrinal works, and need to disseminate them either for free or for a fee. Their focus is on selecting a powerful search engine, acquiring a versatile content management system (CMS) and setting up automated or very efficient update processes. Although each provider has specific requirements regarding the features and fields that should be included or excluded from its own solution, twenty years of expertise has shown Lexum that such requirements can be met with a flexible data structure. From these observations stem the fact that online provision of legal information can be managed through SaaS in the same way as timesheets. The main distinction between them is that while payroll management solutions are comfortably hidden in the back office, online legal information solutions are at the forefront of each provider's website.

To meet that challenge Lexum has developed the capacity to blend its products into the websites of its clients. Tested and proven on the Canadian Federal Courts websites since the late 1990's, the approach has been scaled to numerous courts, tribunals, municipalities and other organization websites over the last few years. This paper briefly explores how this approach is technically implemented and highlights its benefits for legal information providers. It shows how even the smallest players in the field can leverage existing online self-publishing platforms in order to setup a state-of-the-art dissemination website for their own databases of legal information.

### **1. What Legal Information Providers Actually Want**

Legal information providers come from a variety of backgrounds. Courts, tribunals, and agencies produce decisions in which the public often has an interest. Governing bodies, such as national governments, state governments, and municipalities, draft regulatory texts of varying force but nevertheless requiring wide dissemination. Similarly, publishers, bar associations, continuing legal education organizations and the like hold collections of books and manuals targeted at the legal profession. Others, like Legal Information Institutes and associations of all sorts are involved in the redistribution of legal information produced by other bodies. All of those organizations have the common need of efficiently managing the material at the core of their expertise and making it more widely available. In the case of public institutions, this access is most often provided for free, but access fees are also encountered, especially in the private sector and where added value content is produced on top of the primary legal information.

Even if the concept applies to a melting pot of very diverse organizations, Lexum's experience has shown that the vast majority of legal information providers share similar requirements when it comes to their management and dissemination efforts. First and foremost, they are looking for a powerful search engine. In the Google era, any serious initiative aiming at improving access to text-based information requires full text search capabilities.

Nowadays, search technologies involve much more than finding specific keywords in the body of a file. Advanced algorithms are required to sort top documents from thousands of others potentially including the same keywords. Ranking is based on such criteria as the proportion between hits and the size of the document, statistical comparison with other documents within the same subset, identification of alternative keywords sharing the same root (stemming) and automatic identification of sub-phrases within individual queries. Users also expect search solutions to include features

like auto-completion of queries, auto-correction of spelling errors, and the possibility to save queries for subsequent re-use. And this list does not even mention advanced display mechanisms ranging from generation of document snippets, highlighting of keywords in context, and advanced graphical visualization of search results.

On top of those generic needs that are shared with other IT fields, the handling of legal information adds its own specificities. It has long been demonstrated that relationships between legal documents in the form of citations can be used to sort them just as links between webpages can help to sort the web (Tapper, 1981). Legal researchers are also in need of specialized fielded search and noteup technologies in order to locate documents that supersede or are simply more recent than the one in question. They benefit from intelligent tools recognizing legal abbreviations and expressions. Legislative changes can most adequately be analysed with a side-by-side document comparator automatically aligning corresponding sub-sections.

This long list simply demonstrates that the search engines of modern legal information systems have become highly complex. As complexity increases, the possibility for in-house projects to compare favourably is reduced in parallel. However, search technology is only one of the components legal information providers are looking for when thinking about setting up a database of judicial decisions, regulatory material or doctrinal works. Coming next in line is a flexible, adapted CMS.

The request most often heard from people looking to procure a legal information system is that content should be made easy to update and not require any intervention from technical staff. Today this objective has been met by all modern CMS platforms available on the market. Graphical end-user interfaces and web-based interfaces integrating WYSIWYG (What You See Is What You Get) content editors and capable of auto-generating complete websites are now the norm. It remains that some CMS are much simpler than others. Automatic document conversion from source files to formats better adapted for the web (such as HTML and PDF) is not a part of every CMS solution, although it provides tremendous value to organizations aiming to disseminate documents on the Internet. Other similar advanced features include versioning of content, management of user access rights, tagging and annotation, current awareness mechanisms based on email and social media, and multilingual support.

Just as for search engines, CMSs designed with legal information in mind have their own specificities. For a start, their structure needs to be able to reflect the hierarchy between legal norms. Fields adapted to the legalese world are also needed, and this is something that can require quite a bit of flexibility. For example the “judge” field might need to be renamed “decision-maker”, “adjudicator”, or “board member” in various contexts.

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Features designed for building and managing the multiple formal relationships between legal documents (between first level and appellate decisions for example) also tailor the technology to the needs.

Lexum's experience shows that, after search and content management, legal information providers' next IT priority is related to the adoption of efficient update processes. This can be explained by the simple fact that, as sophisticated as a solution may be, it amounts to nothing if the burden of inputting the data and updating it is too heavy. This is of particular significance in the case of legal information databases, which are often made of thousands, if not millions, of individual documents produced on a regular basis. Ways to meet that need take different forms, some relying on technology, some on human resources. Automatic-data extraction from the body of files, in other words, an appropriate Application Programming Interface (API), for the exporting/importing structured metadata between distant systems is of the first sort. Outsourcing data entry tasks to India is of the second. In all cases, these solutions aim at reducing the effort to be invested by the legal information provider's team.

Because of the nature of the data at stake, security is another issue of importance for legal information providers. The official nature of many legal documents primarily accounts for the high security expectations surrounding them. The most frequent request is that everything should be done to restrict the capacity of third parties to alter the original documents. Obviously, many technical obstacles can be put in place for that purpose, beginning with hosting the servers in a secure environment. This involves concrete elements such as a locked server room, backups, firewalls, off-site redundancy, and the like. Software also needs to be made secure by constant application of the best practices in the industry: management interfaces should be secured with SSL, there should be strong password policies embedded in the system, passwords stored in the database should be encrypted, etc. But once these obvious elements have been stated, it should be added that in a cloud-based environment the contractual relationship established between the legal information provider and the hosting provider is another variable. Sharing of liability and provider commitments in case of a security breach are only two examples of contractual clauses requiring particular attention. However, in the end, security is first and foremost a question of confidence. Serious hosting providers take security to heart because negligence in this area would be equivalent to suicide. Security breaches challenge client confidence, and untrusting clients generally do not stay around for long.

Finally, protection of confidential data potentially included in legal documents is another closely related issue. Either because of legal obligations imposed on them or for ethical considerations, legal information providers are often mandated to shield part of the information

under their care from the public. This takes the form of obligations to remove the names and other personal information from files in certain circumstances, as well as across-the-board restrictions on publication. Thus, legal information systems need to be equipped in consequence. Corresponding management of user rights and permissions is required for the provision of an adequate view for each category of users. In the same vein, availability of software facilitating redaction of documents (by automatically detecting personal information for instance) may speed things up for legal information providers.

When all these potential needs are viewed together, one quickly grasps the challenges of designing and developing a professional legal information system from scratch. Even if most legal information providers are ready to settle for partial solutions, it remains that the risk of failure and the efforts required both call for the adoption of “off-the-shelf” solutions. However though readily available SaaS solutions for management of back-office tasks are now widely available, offers targeting the dissemination needs of legal information providers are scarce at the very best. Of course the specialized nature of the field certainly contributes to this, but it can be argued that other specialized fields benefit from a greater SaaS offer. Think of all the cloud-based e-learning platforms targeting the academic and corporate sectors (Gilfus Education Group, 2013). Perhaps the fact that dissemination of legal information is at the forefront of legal information providers’ public websites has also something to do with it.

## **2. Lexum’s Approach to Blending In**

Ever since its early projects in the 1990s, Lexum has been providing legal information providers with cloud-based services. Of course the designation was different at the time, but the approach was just the same. When Lexum initiated dissemination of Supreme Court of Canada decisions on the web in 1993, the project was achieved from servers located at the University of Montreal. Later improvements allowed recent judgements to be sent by the Supreme Court staff via emails, the reception of which triggered website updates. Similar processes were put in place in 1998 when the Federal Courts followed suit, but the requirements of the Federal Courts were subtly different: they wanted their decision website to appear under their own branding.

Like everybody else at the time, Lexum answered such requests by developing custom systems handcrafted to perfectly match the specific needs of each of its clients. Online dissemination of legal information was a new field of expertise in full expansion and every client had its own ideas about the features its website ought to provide. The cost of those personalized systems was high and the organizations investing in them

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were facing a potential high risk of failure simply because the developers were required to innovate each time. It was generally agreed among experts that online dissemination of legal information required advanced software and expertise, and “whenever possible, to set up a server dedicated to the project” (Poulin, 2004).

But after fifteen years developing custom-made systems specializing in the management and dissemination of legal information, it became evident that major features and components were reproduced again and again. Lexum's Word to HTML/PDF converter, Polyglotte, has been an essential part of almost every project launched by the team since 1996. The same can be said about Lexum's search engine, LexFind, or more simply about the need to sort judicial decisions by case name, date and subject matter. Experience has shown Lexum that although the wish list of legal information providers is endless, a core set of expectations is shared by a vast majority of them. Moreover, specific local requirements can most often be met with flexibility. For instance, customizable labels make it possible to change field names between clients without any technical intervention. Similarly, data extraction parsers adaptable to various document templates facilitate automated importing of data without imposing any burden on the source organization.

This analysis eventually led Lexum to focus its energy on developing standardized products that can be shared among its clientele. Because of the company history as a provider of online solutions, its products inevitably ended up taking the form of SaaS. Lexum's products uniformly address the common needs of legal information providers, but also offer a large selection of optional added-value features giving a unique flavour to every release. As of today Lexum has launched three distinct SaaS solutions designed to provide efficient access to, respectively, decisions, regulatory material, and finally books and manuals.

However, the challenge first submitted to Lexum in 1998 by the Federal Courts remains as relevant as ever: how do you make such standardized products fade into the background so that the resulting information systems promote the client's brand? Because dissemination systems are at the forefront of each legal information provider outreach efforts, the issue is often crucial. For instance, access to written opinions is often considered courts' most important contact with the public (Hulse, 2011). For this reason, seamlessness of proposed solutions has been a constant request from legal information providers and has even fuelled the demand for costly personalized solutions up to very recently.

To meet this challenge, Lexum has devised an approach that involves giving its products a skin so that they take on the look and feel, as well as the brand and visual identity, of each client's website. This is achieved by using the client's website template (standard HTML and CSS pages) as a

wrapper around the Lexum source code. By clearly distinguishing the formatting from the content of the product interface, it becomes possible to align the style requirements of the client's website with the content components of the Lexum product. Thus, with limited effort, Lexum products can be graphically embedded within almost any modern website. Furthermore, Lexum's products are made accessible under the client's subdomain. Technically, this is achieved using a lightweight approach requiring very little intervention from the legal information provider. It simply requires creating a subdomain within the client's main domain. This subdomain is then used to direct users to Lexum's network, where content and functionalities reside (for example: decisions.yourdomain.org). This is achieved by adding a CNAME to the DNS record for the client subdomain. This CNAME points to a URL designated by Lexum (for example: <http://decisia.lexum.com>). By doing so, when users access the client subdomain, they are automatically rerouted to the web location where the Lexum product is hosted. The integration is completed by inserting one or several links on the client website (for example in the top navigational bar or in the left-hand side menu) which point to the subdomain dedicated to the Lexum product.

By combining skinning and the subdomain mechanism, Lexum products can truly blend into clients' online environment. Thanks to this approach, legal information users can seamlessly navigate between webpages administered by Lexum's clients and the Lexum product without even noticing.

The transparent integration of Decisia into court, tribunal and agency websites perfectly illustrates this point. Decisia is an online service for decision-making bodies seeking to offer easy, professional access to their decisions from their own website or intranet. Decisia manages dissemination of decisions as well as other complementary resources, such as bulletins, press releases, hearing notices, etc. Decisia provides decision-making bodies with a search engine enhanced for legal information retrieval, a data structure specifically designed with judicial information in mind, as well as an auto-fill feature geared to automatically recognize metadata in the body of decision files.

Decisia can be seen in action on the Canada Industrial Relations Board (CIRB) website (<http://decisions.cirb-ccri.gc.ca>). The CIRB renders hundreds of decisions every year on labour law issues involving employees, unions and employers in sectors under the Canadian federal jurisdiction. The CIRB selected Decisia in order to expand search and navigation functionalities made available to the public, but also to its own employees. As such, authorized CIRB staff logs into Decisia from the CIRB website on a daily basis to find and retrieve confidential decisions



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files with restricted access. Most of them probably do not realize that they are using a cloud-based service when doing so.

OyezOyez reproduces the same approach for governing bodies wishing to provide easy, professional online access to their legislative and regulatory material. OyezOyez is a flexible solution for managing and disseminating statutes, codes, regulations, rules, by-laws, enactments, as well as many other types of legislative documents. In the same vein as Decisia, OyezOyez provides legal information users with advanced browsing and searching functionalities, allows for document tagging and crosslinking and keeps the public and the legal profession updated via email, RSS feeds and social media sites. And just as for Decisia, OyezOyez blends into the websites of organizations of any size.

The website of the Township of Brock is a perfect illustration (<http://oyezoyez.townshipofbrock.ca>). A rural community with a population of 12,000, the township uses OyezOyez to disseminate on the Internet up-to-date information on its bylaws, council and committee meetings, policies and plans. The township initiated online publishing in a matter of days following the decision to adopt OyezOyez, although it waited for months for its new website design. Its online presence is now in line with much larger neighbouring towns and cities although it cost Brock only a fraction of what they paid to develop their own dissemination websites.

The examples of the CIRB and the Township of Brock highlight how legal information providers can benefit from adopting fully blended SaaS solutions. Like any other organization outsourcing its infrastructure through IaaS, they reduce their need to host expensive servers and, of course, to manage them. This implies some financial savings but, more importantly, capacity increase. However, it is the adoption of SaaS that truly multiplies this capacity increase by, first, making the solution available as soon as the need is felt and, second, increasing the efficiency of staff on a permanent basis. For example, when previously they would have undertaken website reengineering projects every five years on average, they now see new features added every few months without having to plan for, budget or even develop any of them. Instead, all of the energy saved can be invested in content management, a task closer to their field of specialization and certainly more valuable to their stakeholders.

Lexum's approach to blending its products into the websites of legal information providers, such as the CIRB and the Township of Brock, is not by itself at the origin of the benefits: the SaaS model should be credited for that. However, the value of Lexum's transparent integration is in making the SaaS model a practical solution for many organizations that could not have considered it otherwise. This is strengthened by the in-depth field expertise Lexum has developed over the last 20 years. This specialized

knowledge has evolved into adapted service level agreements and user rights management mechanisms, options to block Google indexing at will, and complementary services, such as redaction of judgements to protect parties' identities. Altogether, these components of Lexum's offer guarantee that the high expectations of legal information providers regarding security and privacy will be met as well.

There is no doubt whatsoever that legal information providers planning to setup a new information system or to upgrade an existing one should seriously consider the opportunities offered by cloud computing. Efficiency mandates it. As recently stated in a market trend analysis produced by Gartner: "Companies that have not already established formal mechanisms to evaluate cloud services based on business benefits and workload/data constraints must do so in 2013 or risk falling behind" (Gartner, 2013). Yet, as described above, the cloud proposed by the major market leaders (largely through IaaS and PaaS) brings the usual benefits, but certainly does not exploit them to their full potential. Ultimately, legal information providers taking this direction are left with the classic need to develop their own solution on top of generic software platforms or start from scratch. On the other hand the blended SaaS model proposed by Lexum opens a brand new option: taking advantage of an "off-the-shelf" turnkey solution. Fully specialized, yet established products designed with the various legal information materials in mind (whether judicial, regulatory or doctrinal) are already at their disposal online. Of course moving from a tightly controlled in-house solution to adopt a third-party operated cloud-based alternative in search of improved efficiency somehow involves taking a big step forward. But it is a step most organizations are bound to take in coming years.

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